

## DOH ARBOVIRUS WEEKLY UPDATE

August 24, 2003

West Nile virus is an emerging infectious disease, and only appeared in the eastern United States in 1999. In 2002, the virus spread to forty-four states in the United States; Oregon, Nevada, Utah and Arizona documented no West Nile virus activity. As of 13 August 2003, West Nile virus has been detected in 42 states. Verified human cases have occurred in 23 of those 42 states. As part of the West Nile virus surveillance system, the Department of Health (DOH) conducts human, avian, mammal and mosquito surveillance and keeps extensive database and spreadsheet records detailing the surveillance. DOH established a West Nile virus Call Center number at 202-535-2323, a health care and question line at 202-671-0733 and extensive web site information at <http://www.dchealth.dc.gov/>.

The chances of developing symptoms of West Nile virus from the bite of a mosquito are very remote. Much less than one percent of mosquitoes test positive for the virus in areas where the virus is present. And, if bitten by an infected mosquito, a person has less than a one percent chance that he or she will develop symptoms. Generally, the symptoms are very mild and may not even be noticed. Only in very rare cases will the symptoms be severe. Individuals over the age of 60 are the population most at risk. For 2002, the median age for human disease was fifty-five and the median age for mortality was 78. For 2003, the median age of WNV positive human cases is 46. Any person who suspects that they have the virus should contact their doctor immediately.

DOH has trained staff to assist residents with identifying and eliminating potential mosquito-breeding sites and to speak at neighborhood meetings and health fairs. The fundamental components of the West Nile virus plan are prevention and personal protection.

The West Nile virus program is a fluid program that is continually evaluated and altered to protect the public. Mosquito surveillance has been enhanced to assess the risk to public health and safety in the District. It is paramount to track positive mosquito pools and species. As a result of this increased mosquito surveillance, new species of mosquitoes have been identified as positive for West Nile virus in the District.

In 2002, six pools of *Aedes albopictus* tested positive in the District. This species is a daytime human biter and causes increased concern. Previously only *Culex spp.*, a dawn and dusk feeder, tested positive. As a result, DOH has added precautions of protecting residents against mosquito bites at all times during the day and not just dawn and dusk.

Nationally, per CDC, in 2002, there were 4156 cases of West Nile virus infection, including 284 deaths, in the United States. The outbreak was the largest since the virus first appeared in the Western Hemisphere 4 years ago. During the 2002 outbreak, CDC officials confirmed the first known cases in which West Nile was transmitted through organ transplants and blood transfusions. The possibility the virus could be spread

through breast milk or sexual contact also has been studied. Although most people who contract West Nile have no symptoms and those who do normally suffer little more than flu-like illness, it is believed they still can carry small amounts of the virus in their blood for several days.

### **California: West Nile Virus-positive Mosquitoes Found**

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Relying on tests conducted by the University of California, Davis, the California Department of Health Services today announced the first evidence of West Nile virus in the state in 2003. The UC Davis tests showed that mosquitoes collected in Imperial County near the Salton Sea were carrying the virus. The mosquitoes were collected by UC Davis staff researchers in the Wister Unit of the Imperial Wildlife Area, on the southeast rim of the Salton Sea. They were tested by laboratory staff members at the UC Davis Center for Vectorborne Diseases.

The state health department also said that preliminary tests at state laboratories showed that flocks of sentinel chickens from the same region are likely infected with West Nile Virus. The blood tests indicate that the chickens, which are kept in flocks outdoors, were bitten by mosquitoes infected with West Nile or a closely related virus, the health department said. The Department of Health Services coordinates statewide efforts to prevent the spread of the virus and to watch for it in mosquitoes, wild birds, sentinel chickens, horses, and humans.

UC Davis, with the largest West Nile research and testing programs in the state, is fundamental to those public-health efforts. "During the 2003 season we have tested more than 5000 groups of 1 to 50 mosquitoes each, as well as tissue samples from birds and other animals, for the presence of West Nile virus," said John Edman, director of the Center for Vectorborne Diseases and a UC Davis professor of medical entomology. "All were negative until Tuesday, when we discovered West Nile virus in this group of 27 *Culex tarsalis* mosquitoes we collected near the Salton Sea."

UC Davis researchers recently showed that, among some 200 mosquito species in the United States, *Culex tarsalis* is the species that transmits West Nile virus most effectively. UC Davis professor of entomology Thomas Scott and his students discovered that *C. tarsalis* can spread the virus most efficiently to hosts such as birds, horses, and people. A significant proportion can pass the virus through its eggs to its offspring.

The UC Davis Center for Vectorborne Diseases performs the tests for the state of California to detect West Nile virus in samples from mosquitoes, wild birds, horses, and other animals. Samples from sentinel chickens and humans are tested for viral antibodies in the state laboratories in Richmond.

More information on today's announcement by the California Department of Health Services, along with public safety tips, is posted at <http://www.dhs.ca.gov>.

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[This is the first confirmation of the spread of West Nile virus as far west as the state of California. 2 previous human cases of West Nile virus infection in California are believed to have been a consequence of exposure to the virus outside of the state. - Mod.CP]

### **United States: West Nile Virus Activity; Thu 14 to Wed 20 Aug 2003**

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This report summarizes West Nile virus (WNV) surveillance data reported to CDC through ArboNET as of 3 a.m., Mountain Daylight Time, Wed 20 Aug 2003.

#### **Human**

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During the reporting week of Thu 14 to Wed 20 Aug 2003, a total of 322 human cases of WNV infection were reported from 21 states (Alabama, Colorado, Georgia, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Minnesota, Nebraska, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Virginia, & Wyoming), including 5 fatal cases from 3 states (Colorado, Nebraska, & Ohio). During the same period, WNV infections were reported in 1143 dead birds, 291 horses, one dog, and 491 mosquito pools.

During 2003, a total of 715 human cases of WNV infection have been reported from Colorado (n = 263), South Dakota (n = 117), Nebraska (n = 99), Texas (n = 70), Louisiana (n = 30), Wyoming (n = 21), Pennsylvania (n = 17), Mississippi (n = 14), Minnesota (n = 12), Alabama (n = 11), Iowa (n = 9), Ohio (n = 9), New Mexico (n = 8), North Dakota (n = 6), Florida (n = 4), Kansas (n = 4), Kentucky (n = 3), Oklahoma (n = 3), Georgia (n = 2), North Carolina (n = 2), Tennessee (n = 2), Virginia (n = 2), Arkansas (n = one), Maryland (n = one), Massachusetts (n = one), Missouri (n = one), New Jersey (n = one), South Carolina (n = one), & Wisconsin (n = one).

Among 692 (97 percent) cases for which demographic data were available, 394 (57 percent) occurred among men; the median age was 46 years (range: 17 months to 97 years), and the dates of illness onset ranged from 29 May to 11 Aug 2003.

Of the 692 cases, 14 fatal cases were reported from Colorado (n = 6), Nebraska (n = 3), Alabama (n = 2), Texas (n = 2), & Ohio (n = one).

#### **Blood donors**

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A total of 103 presumptive WNV viremic donors have been reported from 9 states (Colorado, Florida, Louisiana, Minnesota, Mississippi, Nebraska, New Mexico, South Dakota, & Texas). Of these donors, 10 had WNV fever and none had WNV meningoencephalitis.

#### Animals

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In addition, 3405 dead birds with WNV infection were reported from 38 states & New York City; 703 WNV infections in horses have been reported from 31 states (Alabama, Arizona, Arkansas, Colorado, Delaware, Florida, Georgia, Illinois, Iowa, Kansas, Kentucky, Maryland, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Wisconsin, & Wyoming), 4 WNV infections were reported in dogs, one infection in a squirrel, and 5 infections in unidentified animal species.

#### Sentinel chickens & horses

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During 2003, WNV seroconversions have been reported in 338 sentinel chicken flocks from 11 states (Colorado, Delaware, Florida, Georgia, Iowa, Louisiana, Nebraska, North Carolina, Pennsylvania, Utah, & Virginia). Louisiana and South Dakota each reported 3 seropositive sentinel horses.

#### Mosquitoes

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A total of 1959 WNV-positive mosquito pools have been reported from 31 states (Arizona, Arkansas, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, New Mexico, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, Wisconsin, and Wyoming) & New York City).

### **District-Wide Mosquito Data**

#### Overall District Mosquito Update

The US Army Center for Health Promotion and Preventive Medicine –North (USACHPPM-North) tests all mosquitoes collected within the District. Specimens are submitted from Department of Defense Installations, National Park Services and the Department of Health. Thirteen positive mosquito pools have been identified. As of the Pool and Testing Log Report dated 13 August 2003, 5157 female mosquitoes sorted in 607 pools have been processed. 513 pools have been tested; 500 negative, 13 positive. The Department of Health has 428 female mosquitoes awaiting testing. Specimens have been submitted from DoD installations at Walter Reed Army Medical Center and Ft. McNair and the Armed Forces Retirement Home, National Park Services locations at Rock Creek Park, National Capital Parks-East, National Capital Parks-Central and the C

& O Canal, East. Department of Health trap locations are located in each Ward of the District.

Eastern Equine Encephalitis: All mosquito pools to date have tested negative for EEE.

Malaria: 9 pools of Anopheles mosquitoes from Ft. McNair tested negative for Vivax malaria by both VecTest and PCR.

Species collected within the District include:  
Aedes, Anopheles, Culex, Ochlerotatus

## **STATUS OF DISTRICT PROGRAMS:**

### **CALL CENTER**

- DOH established a West Nile Virus Call Center at 202-535-2323 effective April 11, 2003. Residents and visitors are encouraged to call the Call Center to report standing water, mosquito concerns, and dead birds and to request advice and assistance.
- The Call Center, year-to-date, has received over 308 calls regarding standing water, mosquito infestations, larvicide and dead birds.

### **HUMAN SURVEILLANCE**

- Currently, there are 36 cases of meningitis in the District. DOH is assisting hospitals with reporting these cases. Eight cases are viral, five are bacterial, four are aseptic meningitis and nine are listed as other.
- Eighteen specimens have been tested for West Nile virus; one is pending, 17 have been confirmed negative.
- DOH has contacted all hospitals to review protocol for WNV-suspect cases.
- DOH staff conducts active human surveillance.
- DOH staff distributed West Nile virus Physician Alerts by blast fax to health care providers and hospitals detailing the West Nile virus case definition, reporting and specimen collection and submission criteria.
- DOH staff contacts hospital infectious disease practitioners weekly to determine if any patients meet the testing and reporting criteria, effective May 15.
- DOH staff prepares, processes, transports and submits human specimens for testing.
- In 2001, 20 human samples were submitted for testing. All samples tested negative.
- In 2002, 80 human samples were submitted for testing. Thirty-one samples were positive. Three samples were probable, twenty-eight samples were negative and eighteen samples were considered pending because information was not complete.

## MOSQUITO SURVEILLANCE

- Positive Pool Locations (total=13): 3000 blk M St, NW (2 pools); 3000 blk North Capital St, NW (9 pools), 4300 blk Polk St, NE (1 pool), 2700 blk Woodley Pl, NW (1 pool).
- Twenty-four gravid traps have been set for the week of August 18 thru August 24 in Wards 1, 2, 3, 4, 5 and 7. Mosquito magnets with octanol attractant and CO<sub>2</sub> were set in Ward 4.
- Specimens collected from the week of August 18 thru August 24 are as follows; Ward 1-9, Ward 2-5, Ward 3-51, Ward 4-159, Ward 5-29 and Ward 7-158 female mosquitoes. Mosquitoes are sent to US Army Center for Health Promotion and Preventive Medicine, Ft. Meade, MD to be sorted into pools. (A mosquito pool consists of 1-25 female mosquitoes of a specific genus and species from the same trap, location and trap night.)
- YTD, 2509 female mosquitoes have been collected by DOH and sent for testing.
- The Department of Health currently has 1045 female mosquitoes awaiting testing.
- Trapping began the first week in June. Trap locations have been determined.
- DOH staff sets gravid traps, throughout the District in each ward per an established grid pattern. A collaborative effort between DOH, National Park Services (NPS) and the Department of Defense (DoD), ensures that trapping locations incorporate all areas of the District.
- DOH staff set mosquito traps and collect specimens from over 30 traps. Traps are set for 2 trap nights per week. Mosquitoes are sorted, prepared for testing and transported the Ft. Meade, MD for arboviral testing.
- The US Army will test all District mosquito specimens for West Nile and other relevant arboviruses and malaria, depending on species.
- In 2001, 870 pools were collected in the District and submitted for testing. Three pools tested positive.
- In 2002, 1315 pools were collected in the District submitted for testing. 84 pools tested positive, including 5 pools of *Aedes sp.* and 79 pools of *Culex spp.* Locations of positive pools are as follows: 3100 blk Conn. Ave (1), Rock Creek Park (17), Ft. McNair (47), US Soldier and Airmen's Home (19).
- In 2002, there were 19 individual *Anopheles* mosquitoes (possible carrier of malaria) collected and placed into eight pools that were tested for malaria. All pools tested negative.

## AVIAN SURVEILLANCE

- 2003: Year to date there have been 186 dead bird reports with the following break-down by ward; Ward 1-10, Ward 2-14, Ward 3-35, Ward 4-30, Ward 5-24, Ward 6-28, Ward 7-25, Ward 8-20.
- | <u>Week</u>    | <u>Bird Reports</u> |
|----------------|---------------------|
| April 14-20    | 4                   |
| April 21-27    | 3                   |
| April 28-May 4 | 6                   |
| May 5-11       | 5                   |

May 12-18	7
May 18-25	3
May 28-June 1	26
June 2-8	19
June 9-15	12
June 16-22	7
June 23-29	5
June 30-July 6	7
July 7-13	9
July 14-20	16
July 21-27	15
July 28-August 3	13
August 4-10	16
August 11-17	14
August 18-24	18

- DOH no longer collects and tests dead birds because West Nile virus is considered endemic in the District. Further positive results of dead bird testing do not provide any relevant information. Information will be collected on sightings of dead birds for empirical information.
- The Smithsonian Institute and the US Army are testing select birds for West Nile and other arboviruses. Year-To-Date, two birds have tested positive. An American Robin collected 7/22 from 1400 blk D Chanute, SW and a Black-crowned heron collected 7/17 from 3100 blk Connecticut Ave, NW.
- Sightings of dead birds are received and compiled at the Call Center. Residents are asked to report the location and physical description of all dead birds. A database will be established and maintained to capture all information.
- Residents are encouraged to dispose of the birds. Specific detailed instructions for disposal are available on the DC Website ([dchealth.dc.gov](http://dchealth.dc.gov)) and at the Call Center (202-535-2323).
- In 2000, the first positive bird was collected on September 28, with a total of 5 positive birds for the year.
- In 2001, the first positive bird was collected on July 10. Nine hundred fourteen (914) birds were collected, four hundred forty-four (444) were tested and three hundred sixty (360) tested positive, with a percent of positivity of 81.08%.
- In 2002, the first positive bird was collected on May 1. Nine hundred five (905) birds were collected, three hundred forty (340) were processed for testing, thirty-one (31) tested negative, one hundred thirty-four (134) were disposed of and one hundred seventy-five (175) birds tested positive with a rate of positivity of 84.95%.
- The positive bird breakdown by ward for 2002 was Ward 1-10, Ward 2-8, Ward 3-123, Ward 4-12, Ward 5-2, Ward 6-7, Ward 7-16, and Ward 8-2.

## **MOSQUITO CONTROL**

- As surveillance data reflects locations of West Nile virus activity, staff will larvicide an eight-square block area surrounding these sites.
- Year-to-date 2003, DOH staff has larvicided 3190 catch basins. The Ward breakdown is as follows; Ward 1-188 catch basin; Ward 2-250 catch basins; Ward 3-891 basins; Ward 4-584 basins; Ward 5-417 basins; Ward 6-277 basins; Ward 7-338; Ward 8-235 catch basins.
- Year-to-date 2003, DOH staff has applied larvicidal treatments in alleys with improper drainage, ponds, swamps and park sites in 43 locations, 9 of which are constant bodies of water.
- DOH staff larvicide in response to WNV positive human test results, WNV positive mosquito results, mosquito density and nuisance areas and community concerns. The larvicide, a biological product that kills mosquitoes in the larval stage, is placed in catch basins and in areas of standing or stagnant water.
- In April of 2003, DOH staff began larviciding in the District at locations of positive birds and mosquitoes from the previous year in an eight square block area at each location.
- The larvicide application is repeated approximately every 5-6 weeks.
- Larviciding has been determined to be more effective over a period of time than adulticiding. In 2002, mosquito catches were significantly reduced in areas where larviciding efforts were conducted.
- In 2001, DOH staff larvicided three thousand four hundred ninety-six (3,496) catch basins.
- In 2002, DOH staff larvicided ten thousand eight hundred thirty-five (10,835) catch basins.
- The District does not expect to spray for mosquitoes because of low efficacy; die-offs of non-target species and potential health risks to a high population of persons affected with respiratory problems and compromised immune systems.
- Killing mosquito larvae and eliminating mosquito-breeding sites are the most effective practices to reduce the numbers of mosquitoes.
- The Center for Disease Control and Prevention (CDC) recommends that larvicide be used to reduce mosquito populations.

## **MAMMAL SURVEILLANCE**

- DOH staff conducts passive mammal surveillance.
- DOH staff distributed information to vets, pet shops, and horse stable managers detailing reporting and specimen collection and submission criteria and protocol.
- No mammals have tested positive in the District for the last four years.
- Letters to all veterinarians in the District have been sent to assist veterinarians in recognizing, submitted samples for testing and reporting West Nile virus cases.



## **OUTREACH AND EDUCATION**

- In 2003, year to date, approximately 47,896 brochures have been distributed to elderly homes, day care providers, neighborhood services, door-to-door and to all DC Libraries. Literature has also been available at various events.
- DOH Representatives have participated in 8 media interviews with CNN, Channel 7/8, Washington Post, WHUR Radio, Channel 9, Metro Weekly News, Washington Times and Channel 5.
- DOH has educated participants of the DC Government Safety Fair by setting up a booth, passing out literature and speaking with concerned citizens.
- DOH has prepared an informational brochure emphasizing prevention and protection. The brochure has contact information for the Call Center and website. It has been translated into Spanish, Chinese, Korean and Vietnamese.
- DOH has developed space on the DOH website to provide residents with information, including, the District Arbovirus Surveillance and Response Plan for 2003, methods of controlling mosquitoes, CDC questions and answers, recent press releases and weekly updated surveillance reports.
- DOH has developed an informational script and power point presentation for community presentations.
- In 2002, DOH staff distributed brochures door to door to 46,987 residences, and spoke to residents about prevention and protection techniques. DOH distributed approximately 201,250 brochures in bulk.
- Brochures have been distributed to private citizens, day care centers, senior citizen homes, residential housing, hospitals, libraries, schools, parks and recreation centers, churches, other District agencies, NSC Coordinators and all ANC Commissioners.